

## Abstract

A commutator 10 is equipped with a magnet 1 for use in detecting and diagnosing motor inefficiencies and problems as well as in adjusting motor parameters to impact motor operation. The commutator comprises a shell 12, an insulating core 14 positioned adjacent the shell, and at least one magnet positioned adjacent the core. Magnetic sensors placed within the motor housing detect and read the flux lines emitted from the magnet on the commutator. The magnet is preferably integrally-formed with the commutator, thereby facilitating its retention in the motor housing, and is preferably manufactured from an electrically non-conductive material and therefore does not impact, in and of itself, the operation of the motor.